

Title: Olefin Production Process
Serial No. 08/951,201
Filed 10/14/97

LISTING OF CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application. Please amend the claims as indicated below.

1. (Currently Amended) An olefin trimerization system for a homogeneous catalyst system comprising in combination:
 - a) a loop reactor;
 - b) a first inlet line for olefin reactant operably connected into said reactor from a first source of olefin reactant;
 - c) a second inlet line for catalyst operably connected into said reactor from a source of the homogeneous catalyst system, wherein said first inlet line and said second inlet line are separate from one another and are located in said reactor to provide thorough contact within said reactor of the materials they carry;
 - d) a reactor effluent line from said reactor for transferring olefin reactant, the homogeneous catalyst system and trimerization reaction products; and
 - e) a separator operably connected to said reactor effluent line to separate desired trimerization reaction products.
2. (Previously Presented) A trimerization system in accordance with Claim 1, further comprising a filter operably connected into said reactor effluent line.
3. (Previously Presented) A trimerization system in accordance with Claim 1, further comprising a catalyst system deactivator inlet line operably connected into said reactor effluent line.
4. (Previously Presented) A trimerization system in accordance with Claim 1, further comprising a second source line for olefin reactant operably connected into said first inlet line for olefin reactant from a second source of olefin reactant.

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5. (Previously Presented) A trimerization system in accordance with Claim 1, further comprising an inlet line operably connected into said reactor effluent line from a source of heavies.

6. (Previously Presented) A trimerization system in accordance with Claim 1, wherein said inlet line from the source of catalyst system further comprises a reactor inlet operably connected from a source of trimerization reaction solvent.

7-21. Cancelled.

22. (Currently Amended) An olefin trimerization system comprising in combination:

a) a loop reactor selected from a solution reactor, a slurry reactor, or a gas phase reactor, wherein the reactor does not employ a fluidized bed;

b) a first inlet line for olefin reactant operably connected into said reactor from a first source of olefin reactant;

c) a second inlet line for catalyst operably connected into said reactor from a source of catalyst, wherein said first inlet line and said second inlet line are separate from one another and are located in said reactor to provide thorough contact within said reactor of the materials they carry;

d) a reactor effluent line from said reactor for transferring olefin reactant, catalyst and trimerization reaction products; and

e) a separator operably connected to said reactor effluent line to separate desired trimerization reaction products.

23. (Previously Presented) A trimerization system in accordance with Claim 1, further comprising a filter operably connected into said reactor effluent line.

24. (Previously Presented) A trimerization system in accordance with Claim 1, further comprising a catalyst system deactivator inlet line operably connected into said reactor effluent line.

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25. (Previously Presented) A trimerization system in accordance with Claim 1, further comprising a second source line for olefin reactant operably connected into said first inlet line for olefin reactant from a second source of olefin reactant.

26. (Previously Presented) A trimerization system in accordance with Claim 1, further comprising an inlet line operably connected into said reactor effluent line from a source of heavies.

27. (Previously Presented) A trimerization system in accordance with Claim 1, wherein said inlet line from the source of catalyst system further comprises a reactor inlet operably connected from a source of trimerization reaction solvent.

28. (Currently Amended) An olefin trimerization system comprising in combination:

- a) a loop reactor;
- b) a first inlet line for olefin reactant operably connected into said reactor from a first source of olefin reactant;
- c) a second inlet line for catalyst operably connected into said reactor from a source of catalyst, wherein said first inlet line and said second inlet line are separate from one another and are located in said reactor to provide thorough contact within said reactor of the materials they carry;
- d) a reactor effluent line from said reactor for transferring olefin reactant, catalyst and trimerization reaction products, wherein separation of catalyst from the olefin reactant and the trimerization reaction products occurs after discharge from said reactor into said reactor effluent line; and
- e) a separator operably connected to said reactor effluent line to separate desired trimerization reaction products.

29. (Previously Presented) A trimerization system in accordance with Claim 1, further comprising a filter operably connected into said reactor effluent line.

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30. (Previously Presented) A trimerization system in accordance with Claim 1, further comprising a catalyst system deactivate inlet line operably connected into said reactor effluent line.

31. (Previously Presented) A trimerization system in accordance with Claim 1, further comprising a second source line for olefin reactant operably connected into said first inlet line for olefin reactant from a second source of olefin reactant.

32. (Previously Presented) A trimerization system in accordance with Claim 1, further comprising an inlet line operably connected into said reactor effluent line from a source of heavies.

33. (Previously Presented) A trimerization system in accordance with Claim 1, wherein said inlet line from the source of catalyst system further comprises a reactor inlet operably connected from a source of trimerization reaction solvent.

34. (New) An olefin trimerization system for a homogeneous, liquid catalyst system comprising in combination:

- a) a reactor;
- b) a first inlet line for olefin reactant operably connected into said reactor from a first source of olefin reactant;
- c) a second inlet line for catalyst operably connected into said reactor from a source of the homogeneous catalyst system, wherein said first inlet line and said second inlet line are separate from one another and are located in said reactor to provide thorough contact within said reactor of the materials they carry;
- d) a reactor effluent line from said reactor for transferring olefin reactant, the homogeneous catalyst system and trimerization reaction products; and
- e) a separator operably connected to said reactor effluent line to separate desired trimerization reaction products.

35. (New) An olefin trimerization system comprising in combination:

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- a) a reactor;
- b) a first inlet line for olefin reactant operably connected into said reactor from a first source of olefin reactant;
- c) a second inlet line for a homogeneous, liquid catalyst system operably connected into said reactor from a source of catalyst, wherein said first inlet line and said second inlet line are separate from one another and are located in said reactor to provide thorough contact within said reactor of the materials they carry;
- d) a reactor effluent line from said reactor for transferring olefin reactant, catalyst and trimerization reaction products; and
- e) a separator operably connected to said reactor effluent line to separate desired trimerization reaction products.

36. (New) An olefin trimerization system comprising in combination:

- a) a reactor;
- b) a first inlet line for olefin reactant operably connected into said reactor from a first source of olefin reactant;
- c) a second inlet line for a homogenous, liquid catalyst system operably connected into said reactor from a source of catalyst, wherein said first inlet line and said second inlet line are separate from one another and are located in said reactor to provide thorough contact within said reactor of the materials they carry;
- d) a reactor effluent line from said reactor for transferring olefin reactant, catalyst and trimerization reaction products, wherein separation of catalyst from the olefin reactant and the trimerization reaction products occurs after discharge from said reactor into said reactor effluent line; and
- e) a separator operably connected to said reactor effluent line to separate desired trimerization reaction products.